July 8, 2016

Reference No. 054046

Mr. Bradley Roberts
U.S. Environmental Protection Agency
Air and Waste Management Division
Waste Remediation and Permitting Branch
11201 Renner Boulevard
Lenexa, Kansas 66219

Dear Mr. Roberts:

Re: Response to Comments
Vapor Intrusion Investigation Work Plan
Occidental Chemical Corporation
6200 S. Ridge Road, Wichita, Kansas
RCRA ID #: KSD007482029

GHD Services, Inc. (GHD) on behalf of Glenn Springs Holdings, Inc. (GSH) for the Occidental Chemical Corporation (OCC) Wichita Facility has prepared responses to the United States Environmental Protection Agency (U.S. EPA) email dated June 10, 2016. For ease of your review, U.S. EPA's comments are reiterated below in bold italic print followed by our response.

General Comments

Occidental contractors indicated that a VI evaluation (soil vapor samples) was conducted at some/all of the residences overlying the plume. Indicate the number of residences either over or within 100 ft of the plume. If available, provide an existing report that discusses the VI pathway evaluation at each of the residences. The report should at least indicate the soil vapor collection method (e.g., DPT, HSA, hand auger, etc.), the proximity of the soil vapor sample collection probes to the residence (typically within 5 ft), the number of samples/depth of sample per probe (e.g., 5 ft, 8 ft, etc.), the number of probes per home (e.g., one per side, etc.), the number of times per year the samples were collected, the construction of each home (e.g., slab-on-grade, basement crawl space, etc.), soil vapor results, evaluation criteria (RSLs), weather conditions, risk management decisions, preferential pathways (e.g., utility corridors, horizontal remedial piping in proximity to home/plume, etc.), slab integrity, etc.

For use in evaluating future VI analytical results: Region 7 action levels for TCE have recently been updated; residential setting - 2.0 µg/m^3 (SS – 67 µg/m^3), industrial/commercial - 6.0 µg/m^3 (SS – 200 µg/m^3).

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Response

OCC, in coordination with U.S. EPA investigated the potential for vapor intrusion due to the groundwater impacts in seven residences from 2008 to 2010. The following documents were developed and approved by US. EPA in conjunction with the off-site VI investigation and are included in Attachment A with this letter:

- Shaw Environmental, Inc., 2007. Work Plan for Indoor Soil Gas Sampling, Occidental Chemical Corporation, Wichita, Kansas, September 22.
- CRA, 2009. Letter from Bruce Clegg to David Garrett providing Supplemental Off-Site Soil Gas Sample Collection and Analysis Plan on behalf of Glenn Springs Holdings, Inc., Occidental Chemical Corporation Facility, Wichita, Kansas, June 28.
- Shaw Environmental, Inc., 2007. Revised Soils Gas Sampling Work Plan, Occidental Chemical Corporation, Wichita, Kansas, July 25.
- CRA, 2011. Supplemental Quarterly Off-Site Soil Gas Monitoring Summary Report Revision 1, Glenn Springs Holdings, Inc., Occidental Chemical Corporation Facility, Wichita, Kansas, January 17.
- U.S. EPA, 2011. Letter from David Garrett to Juan Somoano providing U.S. EPA's approval of the 'Revised Supplemental Quarterly Off-Site Soil Gas Monitoring Report' dated January 27.

Figure 1 (attached) presents the location of the off-site residences within 100 feet of the extent of the largest off-site plume (carbon tetrachloride) in the shallowest groundwater unit (S2/S3). Additionally, Figure 1 provides the location of the off-site soil vapor sampling locations sampled during the period 2008 to 2010. The soil gas probe locations were installed near the residences; however, some property owners did not grant access or restricted access for sampling near the home. The soil gas probes were installed at two depth intervals at each location: a shallow (15 feet below ground surface [bgs]) depth interval and a deeper (25 feet bgs) depth interval.

Since U.S. EPA's 2011 letter concurring that off-site soil gas was not a concern for off-site residences, the spatial extent of the carbon tetrachloride plume and the concentrations within have not materially changed. Therefore, GSH and OCC believe the off-site soil gas investigation is complete.

Specific Comments

U.S. EPA Comment #1:

Section 2.2.2, Non-Process Area, Groundwater, Page 5 – Indicate groundwater sample collection dates for geoprobes and the two well clusters in the non-process area. Table 2 indicates the maximum detections were in either September or November. Were samples collected in the spring?

Response:

The analytical data summarized in Table 2 is presented in Table A.4 in Appendix A of the VI Work Plan. As shown in this table, the geoprobe locations were sampled in September 2012 and MW147S2/S3 and MW148S2/S3 are sampled semi-annually in November and June. Data from November 2014, June 2015, and November 2015 for these well locations is provided in Table A.4.

U.S. EPA Comment #2

Section 2.2.3, Identification of Facility Buildings, Page 6 – According to Table 7, a VI evaluation was conducted at three buildings (i.e., NP15, NP20 and NP57). As an interim corrective measure in 2011, positive pressure was utilized to inhibit higher contaminated sub-slab vapor concentrations from entering the overlying structure. Indicate the chemicals used/stored in each of the identified structures; indicate the chemicals detected in the plume or presence of DNAPL under each structure. If the detected chemicals in the groundwater are no longer used in the overlying structure, representative indoor air samples should be collected to evaluate the VI pathway and to verify the adequacy/effectiveness of the ICM.

Response:

OCC recently conducted a chemical inventory of these three buildings and the results of the inventory are presented in the attached Tables 1, 2 and 3. The use of chemicals within the Administration building (see Table 1) is similar to the historic chemical usage in 2011 and does not contain the Facility-related COCs. The Facility-related contaminants of concern (COCs), which are shown in Tables 2 and 3 continue to be used and/or stored.

Since the interim corrective measure (ICM) was established in 2011, OCC has completed the quarterly inspection and reporting requirements outlined in the Interim Corrective Measures Operations and Maintenance Plan for the Administration Building, Technical Center and Control Building (CRA, 2011) to document that the performance standards established to eliminate the potential for significant vapor intrusion are being met. The Operations and Maintenance Plan outlines quarterly inspections and reporting of visual observations on the conditions of the building floors and measuring of the pressure differential between the building and the subsurface via permanent pressure gauges. OCC and GSH perform this monitoring to document that a positive (i.e., outward or downward) pressure differential is being maintained within these buildings through the continuously operated Heating Ventilation and Air Conditioning (HVAC) system. The results of the quarterly inspections of the ICM, including the quantitative measurement of pressure differential, have been reported to U.S. EPA since 2011. These data continue to demonstrate that there is no driving force for vapor intrusion into the building and the positive pressurization maintained within the building prevents soil gas entry into the building.

The ICM eliminated the potential for vapor intrusion through over-pressurization of the buildings and by established a monitoring program to document the continued effectiveness of this mitigation approach. The 2011 approach is consistent with U.S. EPA's current thoughts (U.S. EPA 2015 *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*) on evaluating the potential for vapor intrusion and documenting that

vapor intrusion is not occurring. Specifically, page xi of the Executive Summary to the 2015 U.S. EPA guidance states that the vapor intrusion pathway is referred to as "complete" when

> "The building(s) is(are) susceptible to soil gas entry, which means openings exist for the vapors to enter the building and driving 'forces' (e.g., *air pressure differences between the building and the subsurface environment) exist to draw the vapors from the subsurface through the openings into the building*(s) (see Sections 2.3 and 6.3.3);" [*emphasis added*]

As shown in the quarterly reports, all three buildings are under positive pressure. This means there are no driving forces to draw the vapors into the building from the subsurface and the VI pathway for these buildings is not considered complete. Because engineering controls are being used to eliminate the potential for significant vapor intrusion, monitoring of these controls are necessary. Section 8 of the 2015 VI guide provides alternatives "to ensure continued operation and effectiveness of engineered exposure controls to mitigate vapor intrusion". Specifically, Section 8.3 identifies

> "Pressure readings for both active and passive depressurization systems as well as positive pressurization systems (e.g., periodic verification of measurable pressure differences across the slab)" (page 152)

as an operation and maintenance activity. Section 8.4 includes a paragraph titled "Pressure Measurements," which states that

> "Sub-slab probes can be used to monitor differential pressures for a direct indication of the hydraulic performance of ADT systems (i.e., the pressure difference across the slab prevents soil gas entry)". (page 154)

Therefore, the quarterly pressure monitoring that has occurred over the last five years is consistent with current U.S. EPA guidance on how to monitor the continued effectiveness of the exposure controls in place at the Site. Because this monitoring has continually demonstrated that the exposure controls are operating as intended, additional sampling of indoor air is not necessary. Further, the approach of monitoring pressure differential across the building is superior to measuring indoor air concentrations because pressure differential is not subject to constituent contributions from outdoor or other background sources, which could be significant at a site such as this where active chemical manufacturing occurs.

U.S. EPA Comment #3

Table 7 – A VI evaluation will not be conducted in three building (i.e., A4, G1 & 93 in the process area). Apparently these elevated buildings are on stilts at 10 ft above grade. This information should be indicated in the Table. EPA concurs a VI evaluation would not be warranted in this circumstance.

Response:

Table 7 (see Attachment A) has been revised to indicate if buildings are elevated from the ground surface (i.e., Buildings 9, 147, G1) or only have three enclosed walls (i.e., Building 93).

Should you have any questions on the above, or require additional information please do not hesitate to contact us.

Sincerely,

GHD

Charles W. Janson

Charles Janson

AG/kf/32

Encl.

cc: Mostafa Kamal, KDHE
David Anderson, Glenn Springs Holdings, Inc.
Lisa Thurman, OCC, Wichita, Kansas